Investigation Summary: Perchlorate Contamination in Yaphank, Suffolk County, NY

January 2001

Suffolk County Department of Health Services
Clare B. Bradley, M.D.,M.P.H.
Commissioner

Division of Environmental Quality
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Background

Perchlorate (ClO_4^-) exists primarily as solid salts of ammonium, potassium, or sodium perchlorate. The compound has a high aqueous solubility which contributes to its high mobility in groundwater systems. Perchlorate is very stabile and is known to persist for decades in ground and surface waters. The compound ammonium perchlorate (NH_4ClO_4) is an oxidizing agent and primary ingredient in solid fuel rocket propellant, missiles and fireworks. It is also used in some munitions, matches, and vehicle air bag inflators, and is a trace constituent in some chemical fertilizers.

Perchlorate is a health concern because of its effect on thyroid hormone function. It competitively inhibits iodine uptake, which can affect metabolism, growth, and development. The New York State Department of Health has recommended an enforceable drinking water guideline for perchlorate of 18 ug/L; however, a formal Maximum Contaminant Level (MCL) for perchlorate has not yet been established.

An analytical method capable of detecting low levels of perchlorate was developed in 1997 at a California laboratory. Prior to that time, no analytical procedures existed to test for perchlorate below a concentration of 400 ug/L. Monitoring for perchlorate by the Suffolk County Department of Health Services (SCDHS) began in 1998, when in-house laboratory capabilities, with a detection limit as low as 2 ug/L, were developed at the department's Public & Environmental Health Laboratory (PEHL).

The availability of resources limits the number of perchlorate analyses that can be performed by SCDHS. Therefore, it has been necessary to prioritize the testing of drinking water supplies for perchlorate. Community water supplies were given the first priority, because they serve the vast majority of Suffolk County's population. Non-community public water supplies were given second priority, followed by private wells. Additional resources are being obtained to increase the SCDHS monitoring capabilities.

The testing has confirmed perchlorate detections in 36 community water supply wells (at 20 wellfields) in Suffolk County, two of which exceeded the 18 ug/L guideline. As a result, use of the two impacted wells at the SCWA's Old Country Road, Westhampton and South Spur, Commack wellfields were restricted. Perchlorate has also been found in 21 non-community water supply wells at 17 facilities, and one of these exceeded the drinking water guideline (Nature Center at Peconic Dunes County Park).

The testing of private wells in Yaphank was conducted following confirmation of low levels of perchlorate contamination in a non-community supply well serving the Horseblock Road Shopping Plaza. A survey was initiated by the SCDHS Bureau of Drinking Water in which forty (40) wells in the area were sampled. Perchlorate was detected in 13 drinking water wells, including 11 private wells and two non-community water systems. Three of the private wells tested exceeded the drinking water guideline, containing between 24 and 26 ug/L perchlorate. SCDHS advised these residents not to use their well water for consumptive purposes. A summary of the results of the samples in which perchlorate was detected is contained in Appendix A.

Investigation of Potential Perchlorate Sources

An investigation to ascertain potential sources of the perchlorate contamination in Yaphank was initiated in July following the survey of water quality at private and non-community wells. A synoptic round of water table measurements from eight existing monitoring wells in the vicinity of the contamination was performed. These elevations indicated that the local groundwater flow direction is to the southeast – toward the Carmans River. This determination was consistent with prior studies conducted by the department in the area, including the delineation of a plume of 1,1,1 trichloroethane (TCA) that was tracked to the former Suffolk County Department of Public Works testing laboratory in 1981, and a 1998 investigation of tetrachloroethene (PCE) contamination that was found to originate some two miles upgradient of the PCE-impacted private wells on Yaphank Avenue. This flow direction was also in agreement with that found by the United States Geological Survey (USGS) during an investigation of groundwater near the Brookhaven Landfill (USGS Water-Resources Investigations Report 86-4070, E.J. Wexler, 1988).

The perchlorate data gathered by the Bureau of Drinking Water during private well testing along Yaphank Avenue showed a lateral distance of approximately 1,000 feet between the northernmost and southernmost impacted wells. This indicated that contamination likely had originated at a non-point source or sources located in the upgradient area (to the northwest). The perchlorate contamination found in the private wells was estimated to be about 40 feet below the water table, where most private wells are screened in order to comply with SCDHS standards. This depth below the water table implied that the source area was located approximately 4,000 to 5,000 feet upgradient of the impacted private wells, based on estimations of the recharge rate, soil porosity and groundwater flow velocity.

The initial investigation of potential perchlorate sources was based upon the established direction of groundwater flow, and the private and non-community well water quality data. The inquiry had two main components, which were undertaken simultaneously. First, the SCDHS Office of Pollution Control began the inspection of all commercial and industrial facilities located in the upgradient area for past or present perchlorate use or handling. Second, the Bureau of Groundwater Resources began a groundwater investigation with the installation of monitoring wells to track perchlorate back to its source or sources.

Facility Inspections

A systematic examination of the industrial and commercial facilities located in the distant upgradient area (8,000 to 10,000 feet northwest of the impacted wells on Yaphank Avenue) on Sills Road and within the Old Dock Road industrial park revealed no current perchlorate use at these facilities. A summary of the results of these inspections is contained in Appendix B prepared by the Office of Pollution Control. The inspections identified three businesses that may have handled or used items containing perchlorate in the past, including: the Izumi/TRW plant (vehicle steering wheel assembly with air bags), and two sites formerly and currently occupied by True Green/ChemLawn (chemical fertilizers). However, monitoring wells installed and sampled by the Bureau of

Groundwater Resources downgradient of these three potential sources showed no evidence of perchlorate contamination (see Groundwater Investigation section).

The Great Gardens Nursery (chemical fertilizer use), the potential perchlorate source located nearest to the contaminated drinking water wells, was removed from consideration as a possible source based partially on an analysis of recent aerial photographs, and the time frame of first appearance of perchlorate in the downgradient wells. It was determined from the aerial photographs that the perchlorate contamination of the well serving the Horseblock Road Shopping Plaza predated the establishment of this nursery.

The facility inspection conducted at Fireworks by Grucci on August 2, 2000 found that materials containing perchlorate chemicals (fireworks) are utilized and handled at the site. Field testing of fireworks is conducted, as was incineration of waste material including dud shells. Appendix C includes the SCDHS' inspection report dated August 2, 2000, and a list of items in need of corrective action in correspondence of August 7th and 31st, 2000 to Fireworks by Grucci.

Several potential source areas at Fireworks by Grucci were identified where perchlorate contamination could enter the environment. These included the soak pad area where waste shells (duds) are immersed in water in open 55-gallon drums prior to incineration, a pile of demolition debris from the former Explosive Ordinance Disposal (EOD) burn chamber, and an uncovered roll-off container used to store incinerator ash. During the inspection samples of the incinerator ash, EOD demolition debris, soak drum water, and soil adjacent to the soak pad, were collected. The results of the analyses are contained in Appendix C and are summarized in the table below.

Material Sampled	Perchlorate Concentration
incinerator ash	24.6 ppm
EOD demolition debris	0.138 ppm
soak drum water	1,600 ppm
soil at soak drum area	22.3 ppm

* ppm = parts per million

In addition to the potential perchlorate sources that were identified during the facility inspection of Fireworks by Grucci, another possible source may be the field test firing operations at the site. The perchlorate concentrations found in the incinerator ash sample indicate that the incineration process is an incomplete burn of the fireworks chemicals, causing the residual ash to contain elevated levels of perchlorate. These residual concentrations suggest that firing the shells into the air for detonation during field testing would similarly result in incomplete combustion, facilitating air bourne fallout of ash containing perchlorate. Depending on the elevation of the test firing, and wind speed and direction, the unburned residues containing perchlorate may have been deposited over a wide area near the facility.

Groundwater Investigation

The groundwater investigation of potential perchlorate sources was initially based on the previously established direction of groundwater flow and the estimated distance to the source area(s) upgradient of the impacted private and non-community wells. At the completion of the investigation, a series of 20 vertical profile wells and four standard monitoring wells were drilled, and 112 water samples were collected. Water quality sampling data for the profile and monitoring wells are summarized in Appendix D.

Information from prior groundwater investigations conducted by the SCDHS and USGS in the Yaphank area were used to evaluate two sites as potential sources of the perchlorate contamination. First, a former Suffolk County Police demolition pit located west of the Yaphank headquarters building was eliminated as a potential source, because perchlorate was not detected in the monitoring wells installed there during the 1998 SCDHS tetrachloroethene (PCE) investigation, and the established direction of groundwater flow precluded interception with the drinking water wells impacted by perchlorate. Second, the Brookhaven Town Landfill was eliminated as a potential source, since the groundwater flow direction established by the USGS during prior studies, and by the SCDHS as part of this investigation, also precluded interception with the drinking water wells impacted by perchlorate. This conclusion is supported by the lack of landfill leachate indicators in the perchlorate impacted drinking water wells.

The first five monitoring wells for the investigation, designated PP1 through PP5 (see the Yaphank Perchlorate Investigation - Plate 1), were installed as vertical profile wells at locations approximately 5,000 feet upgradient of the known contaminated private and non-community wells. The well locations also ranged from about 300 to 1,000 feet downgradient (southeast) of the Fireworks by Grucci site. All five wells were found to contain perchlorate near the top of the water table. The deepest levels sampled at each well – 30 to 40 feet below the water table – did not contain perchlorate. These data indicated that a source or sources were located in the nearby upgradient area.

The next six vertical profile monitoring wells, designated PP6 through PP11, were installed upgradient of Fireworks by Grucci and downgradient of the Old Dock Road Industrial Park. None of these wells contained perchlorate at any of the aquifer levels tested, effectively eliminating industries within the upgradient area on Sills Road and in the industrial park as potential sources of the perchlorate contamination. Three of these wells were installed downgradient of specific industries that possibly may have used perchlorate in the past.

Wells PP7 and PP10 were installed downgradient of the current and former locations of True Green/ChemLawn, due to the potential for some chemical fertilizers to contain perchlorate. No perchlorate was detected in the monitoring wells at either site. However, both wells contained concentrations of several pesticide related compounds, and these findings were referred to the NYSDEC Bureau of Pesticides Management. Well PP11 was installed downgradient of the Izumi/TRW plant due to the potential use of perchlorate in air bags in steering wheel assemblies. Perchlorate was not detected at any aquifer level

in this well.

Four standard monitoring wells, designated PP12 through PP15, were installed at the perchlorate "hot spot," previously identified by profile well PP5 at a location approximately 1,000 feet downgradient of Fireworks by Grucci. Each of these standard monitoring wells was screened 35 to 40 feet below the land surface, which was approximately 20 to 25 feet below the water table. Perchlorate concentrations in these four wells ranged from 71 to 122 ug/L. These monitoring wells which contained the highest perchlorate concentrations found are located 2,000 to 3,000 feet upgradient of the Great Gardens Nursery, eliminating the nursery as a potential source.

Vertical profile wells PP16 through PP18 and PP20 were installed to delineate the northern and southern boundaries of the impacted area to the east of Fireworks by Grucci. Vertical profile well PP19 was installed to clarify the depth of the perchlorate contamination in the downgradient area of Horseblock Road and Yaphank Avenue. Two shallow private wells tested in this area did not contain perchlorate because they were screened above the contaminated aquifer segment. The results of well PP19 confirmed that the contamination had migrated vertically as well as horizontally. Perchlorate was not found in the upper three aquifer levels sampled, but was detected beginning at a depth of 30 to 35 feet below the water table.

Vertical profile wells PP21 through PP23 were installed in the area immediately upgradient of Fireworks by Grucci. Wells PP21 and PP22 contained low concentrations of perchlorate at the top of the water table while the deeper levels sampled did not, which is an indication of a nearby source. It is possible that the perchlorate present at these two locations resulted from unburned residue from aerial fireworks testing at the site. This theory is supported by the information that no other upgradient perchlorate sources were identified in the facility inspections, and because perchlorate was not detected in the upgradient monitoring wells (PP6 through PP11). As a follow-up to these detections, surface soil samples were collected near well PP20, and from the area between wells PP21 and PP22. The soil samples were analyzed for perchlorate and none was detected.

Vertical profile well PP24 was installed to determine if any of the perchlorate impacted groundwater may have originated at a tannery that allegedly existed decades ago near Horseblock and Sills Roads. No perchlorate was detected at any aquifer level in this well.

Each of the water samples collected from the monitoring wells for this investigation were also analyzed for 23 metals, including arsenic. Compounds containing arsenic are used in the manufacture of fireworks to create blue fire. Arsenic was not detected in any of the water samples.

Data Quality Controls

Additional data to confirm groundwater flow direction and the accuracy of the perchlorate analyses conducted by SCDHS was developed during the investigation. This was accomplished by redetermining water table elevations across the area impacted by

perchlorate, and by obtaining a second independent analysis of water samples shown to contain perchlorate.

In order to conclusively determine groundwater flow direction, all 24 monitoring wells installed by SCDHS were surveyed to establish elevations. A new round of synoptic water levels was taken at the monitoring wells, and also at 10 pre-existing wells, in the area bounded by Sills Road on the west to Yaphank Avenue on the east. The water table measurements are plotted on Plate 2 - Water Table Contours, and the final groundwater contours interpolated from this data set of elevations are also shown on the Yaphank Perchlorate Investigation Plate 1. The contours definitively establish the direction of groundwater flow to the southeast.

An additional analytical quality control (QC) measure to supplement normal laboratory QC was also implemented. Twenty-two (22) well samples reported to contain perchlorate by the SCDHS laboratory were given to the Suffolk County Water Authority (SCWA) laboratory for analysis in a blind test. The water samples were not true split samples, but were collected consecutively at the time of sampling. The table in Appendix E lists the perchlorate results independently reported from the SCDHS and SCWA laboratories. A comparison of the concentrations reported by the two laboratories are consistent, and they confirm that the values are an accurate representation of water quality.

Findings

The two components of the current perchlorate investigation, the facility inspections and the groundwater investigation, were designed to ascertain potential sources of the contamination found in drinking water wells near Yaphank Avenue. The investigation's findings are summarized below:

1. Local groundwater flow direction to the southeast was conclusively determined by twice measuring water table elevations at multiple wells. The flow direction established is consistent with several past groundwater investigations conducted in the area.

2. The perchlorate concentrations detected in monitoring well samples were independently confirmed by analyses at two laboratories - those operated by the SCDHS and the SCWA.

3. The SCDHS facility inspections found that perchlorate was not currently used or handled by any of the businesses examined in the upgradient area on Sills Road or within the Old Dock Road industrial park, with the exception of Fireworks by Grucci.

4. Great Gardens Nursery is not considered a potential source of the perchlorate impacting the drinking water wells because the contamination predated the establishment of the nursery, and the highest perchlorate concentrations detected in groundwater are 2,000 feet upgradient of the nursery property.

5. Groundwater monitoring wells were installed downgradient of four specific sites which may have handled perchlorate in the past: Fireworks by Grucci (fireworks), the Izumi/TRW

plant (vehicle steering wheel assembly with airbags), and two sites formerly and currently occupied by True Green/ChemLawn (chemical fertilizer). Perchlorate was not detected in wells downgradient of the Izumi/TRW plant, or either True Green/ChemLawn location. Several pesticide related compounds were found in the groundwater downgradient of both True Green/ChemLawn sites.

6. The SCDHS laboratory detected perchlorate in the samples collected from the Fireworks by Grucci site, including: the incinerator ash, EOD demolition pile, soak pad water, and the soils adjacent to the soak pad.

7. An area of groundwater impacted by perchlorate was found to extend from the vicinity of the Fireworks by Grucci site to approximately 10,000 feet to the southeast, being 2,000 feet wide immediately downgradient of the site, and with a maximum thickness of 35 feet in the aquifer. The maximum perchlorate concentration of 122 ug/L was detected at well PP15, approximately 1,500 downgradient of the site.

Conclusion & Recommendations

The SCDHS Offices of Water Resources and Pollution Control have conducted an extensive investigation of the potential sources of perchlorate in the groundwater at Yaphank, including: identification of impacted drinking water wells; determination of groundwater flow direction; industrial and commercial facility inspections; monitoring well installation and groundwater testing; soils and materials testing; and, data quality controls.

Prior to 1997, analytical methods to detect the low levels of perchlorate found in Yaphank groundwater did not exist. Therefore, it was not possible for any agency, either regulatory or perchlorate user, to have the ability to identify or track the perchlorate contamination in groundwater that is the subject of this report. Because the report identifies new or emerging issues pertaining to groundwater protection activities and perchlorate use, the information developed will be provided to the United States Environmental Protection Agency (USEPA) Interagency Perchlorate Steering Committee.

The SCDHS recommends:

a) the elimination of the potential upgradient sources of perchlorate, and
b) the extension of public water to the impacted private and non-community wells.

Both of these recommendations are currently being addressed. A representative of the engineering firm of FPM Group, consultant to attorneys for Fireworks by Grucci, has submitted a compliance schedule to the SCDHS that outlines corrective actions that are voluntarily being taken to eliminate potential sources of perchlorate entering the environment, including: upgrading the soak pad area operation, removal of the demolition debris from the former EOD burn chamber, elimination of the rainwater collection system associated with the EOD, and removal of stored incinerator ash. In addition, a follow-up inspection and end point sampling will be conducted by the SCDHS.

The SCDHS has contacted the SCWA and the Brookhaven Community Development Agency and these agencies have begun planning for the extension of public water mains to the properties with perchlorate impacted residential and non-community wells.

APPENDIX A

Private & Non-community Wells Containing Perchlorate

Well	Street	Community	Sample Date	Perchlorate (ug/L)
private #1	Yaphank Ave	Brookhaven	04/06/00	11
private #2	Yaphank Ave	Brookhaven	04/27/00	26
private #3	Yaphank Ave	Brookhaven	04/06/00	24
private #4	Yaphank Ave	Brookhaven	06/26/00	14
private #5	Yaphank Ave	Brookhaven	06/26/00	24
private #6	Yaphank Ave	Brookhaven	06/26/00	11
private #7	Yaphank Ave	Brookhaven	06/26/00	10
private #8	Horseblock Rd	Brookhaven	06/26/00	6
Noisy Oyster Bar & Grill	Montauk Hwy	Brookhaven	09/07/99	5
private #9	Old Barto Rd	Brookhaven	07/06/00	11
private #9	Old Barto Rd	Brookhaven	07/27/00	8
private #9	Old Barto Rd	Brookhaven	07/27/00	8
private #10	Yaphank Ave	Brookhaven	06/29/00	15
private #11	Horseblock Rd	Yaphank	04/06/00	6
Horseblock Rd Shopping Plaza	Horseblock Rd	Yaphank	12/21/98	8
Horseblock Rd Shopping Plaza	Horseblock Rd	Yaphank	02/24/00	7

APPENDIX B

SUFFOLK COUNTY
DEPARTMENT OF HEALTH SERVICES
OFFICE OF POLLUTION CONTROL

REPORT

INSPECTIONS OF INDUSTRIAL FACILITIES DOCK ROAD AND SILLS ROAD, YAPHANK, NY

FOR THE INVESTIGATION OF PERCHLORATE CONTAMINATION IN YAPHANK, NY

PREPARED BY:
THE OFFICE OF POLLUTION CONTROL

JANUARY 2001

Suffolk County Department of Health Services
Office of Pollution Control
Yaphank Perchlorate Investigation

Introduction:

As part of the Department's ongoing perchlorate monitoring program, a representative of the Office of Water Resources collected a drinking water sample from a non-community water supply located on Horseblock Road in Yaphank. Laboratory analysis indicated elevated levels of perchlorate in the water supply. In response to these findings, a survey was performed of private and non-community water supplies in the area. Based on the results of this survey, detectable concentrations of perchlorate in 13 private and/or non-community wells, the information was forwarded to the Office of Pollution Control.

Investigation Summary:

The Office of Pollution Control conducted an extensive investigation of industrial sites upgradient of the contaminated wells. Between August 11th and September 12th of this year, 36 industries were inspected along Old Dock Road, Todd Court and Sills Road in Yaphank.

Staff from the Bureau of Environmental Evaluation and Remediation evaluated the industrial processes, chemical storage and discharge practices taking place on each of the commercial properties. In addition, historical information contained in the Department's files was reviewed for evidence of possible perchlorate usage. Based on the information derived from the site inspections and file reviews a priority sampling list was established.

Findings:

Facility inspections revealed no current perchlorate usage at any of the sites. Three locations, the former TRW facility and the former and present TruGreen Chemlawn sites were of concern based on possible historical perchlorate use or storage.

A review of TRW's file did not indicate historic perchlorate usage. To confirm this, samples were collected from leaching pools known to receive industrial discharges while TRW was in operation. Samples were also collected from the sanitary system and a storm drain at the current TruGreen Chemlawn facility.

To date, six sites have been sampled. Although perchlorate was not detected in any of the sample locations, two of the facilities have been directed to perform industrial cleanups based on other contaminants found.

YAPHANK PERCHLORATE SURVEY

COMPANY/CONTACT	INSPECTION DATE	FINDINGS
Old Dock Road		
3 – The Pixel Print Network Scott Convery 345-3914	8/30/00	Digital Printing Waste toner sent to Xerox One gallon of chemical storage
Multi-Occupied Building:		
2 – Long Island Copy Service Jean Snyder 205-1100	9/11/00	Office Support Area for Copy Service No chemical storage
* **4 – VDH Precision Machinery** Tom Hongthong 924-8267	9/11/00	Machinery Cutting oils, solvents
6 – Islandwide Building Service Bob Potko	9/11/00	Office Support for Building Maintenance No chemical storage
10 – Communication Systems Design Inc. Joseph Miceli 924-7474	9/11/00	Computer Program Operation No chemical storage
12 – Paramount Pools Dan Harrison	9/11/00	Telemarketing Sales No chemical storage
14 – Modular Devices Inc.	9/11/00	Warehouse for Electronics No industrial processes
16 – 18 - FEGS (Federation Employment and Guidance Service) Joan Marsh 205-0183	9/11/00	Employment Service No chemical storage
Multi-Occupied Building:		
7a - American Power Cell & Battery Levone Vetry 205-1061	8/30/00	Batteries – No Waste Facility. Lithium batteries used in the repackaging of batteries, not manufactured on site
7b – Firefighter Products	8/30/00	Repeated attempts to inspect. No one available at site.
7c – McDonnell Elec. Corp. Douglas Kane 924-7272	8/30/00	Warehouse for electrical supplies No manufacturing
9 – HB Millwork Tim Hollowell 924-4195	8/30/00	Woodworking Glue and Epoxy (No paint or stain storage)

	Multi-Occupied Building:		
	11. 4 – Quick Flour Corp. David Shapine	9/11/00	Carpet Sales No Chemical Storage
*	**11.5 - Alternative Parts & Service** Russell Drake 345-9500	9/11/00	Machine Operation (oils, solvents, degreasers)
	11.7 - Champion Horse Supply Inc Gary Parlosky 924-5380	9/11/00	Manufacturers of horse and play ground equipment Injection mold equipment, pigments
	11.9 – DNC Overhead Door Deborah Whiffen	9/13/00	Pre-Made Door Warehouse Minimal solvent usage
	11.10 – Peconic Paper Arthur Lasher 205-5100	9/12/00	Distribution of paper products Five (5) cases of bleach, dish detergent, ammonia No Waste Facility
*	**11.11 – Living Doors Inc.** Liz Plant 924-5393	9/12/00	Wood Door Manufacturers 3 quarts of stain, 16 gallons of paint (Delivers unfinished red oak doors)
	17 – Newsday Bill Norton 924-4405	8/30/00	Newsday Advertising Dept. & Delivery Service No Waste Facility
*	**19 - Automatic Transmissions** Tom Mendola 924-7700	8/30/00	Automatic Transmission Remanufacturing (Previous Tenant was Quality Sheet Metal) mineral spirits, transmission fluid 25 cans of paint spray 2-55 gallon drums of antifreeze 100 gallons of waste oil
*	**21 – AARCO Products** Scott Schillinger 924-5461	8/30/00	Manufacturers of Blackboards, Bulletin Boards and Corkboards Paste, Thinners, Lacquer, Paints (Previously located at Hauppauge Industrial Park , Rabro Drive)
*	**23 - Eagle Control Corp.** Frank Zahadka 924-1315	8/30/00	Waterworks and controls for sewage treatment, assembly of parts, spray-on paints, alcohol and acetone
*	**25 - Motion Message** William Sheridan 924-9500	8/30/00	LED Programmable Displays Solder, flax, HCF cleaner, paints motor oil (previously located at 141-143 Brightside Avenue, Central Islip)
	26 - Fiber Shield Inc. Emmanuel Vickers 345-0240	9/01/00	Manufacturer of Fabric Protectors mineral spirits, silicone, latex emulsion, cleaner, alcohol, toluene **Sampled 12/28/00 – No remediation required.**

	28 – Duraclean Stephen Diaz 473-6445	8/30/00	Carpet Cleaners and Restoration Service Soap cleaners, soil cleaners, bleach, tile glue, glass cleaner, degreasers, etc. – **Sampled 9/27/00 – Elevated Levels of Perc and Dichloroethene found in industrial discharge pool. Remediation Required**
*	**30 – Petro** Tom Crawford 686-1968	8/11/00	Heating Oil and Service, Fleet maintenance - Chemical storage, parts cleaner, antifreeze, motor oils, waste oils, fuel oil additives. Article 12 Problems: outdoor drum storage, non compliant tanks
*	**31 - Display Products** Orlando Vizcaino 345-0302	9/01/00	Manufacturers of Retail Displays Acrylic sheet cutting and bending, silk screening, methanol, methylene chloride
*	**35 – Tribology/Tech Lube** Bill Kruse 345-3000	9/05/00	Manufacturer of Lubricants, additives, grease (Previous location – Beech St., Islip)
	52 – Peters Fruits	8/30/00	Fruit Warehouse No processing or chemical treatment
	56 - Searles Graphics Ken Searles 342-9272	9/06/00	Printing/Graphic Designs Fixer-developer solutions, fountain solutions, alcohol, inks, press-wash, etc. – **Sampled 10/4/00 Results showed no elevated contaminant levels.**
*	**82 – JBH Transport** John Benedetto 924-6347	8/30/00	Trucking Operation/Fleet Maintenance Oil, grease, solvent
	82.a– Wastewater Mgt of NY Scott Pannulla 205-1417	9/05/00	C & D Recycling Waste oils, paints washer, mineral spirits, transmission fluid. **Sampled 10/25/00. No remediation required.** **Art. 12: Illegal Tank on site.**
	Todd Court		
	7 - Tru-Green-Chem Lawn Stan Smolewski 924-7200	9/05/00	Lawn Care Service Facility utilizes potassium base fertilizer (hoat oil, orthene, embark, fungicide, insecticides, etc). Company relocated from Sills Road, Yaphank (Asplund Construction) **Sampled 9/13/00 Sanitary System – Ok; Storm Drain – Remediation required due to elevated VOC concentrations. Cleanup performed 1/10/01. Endpoint sample revealed low level Imidacloprid.**

	Sills Road		
*	**95 - Asplund Construction** Mike Quinn 205-9340	9/12/00	Construction Company Article 12 Problems: drum storage and tank registration. Tank Removed. Antifreeze, oils, waste oils, solvents
*	**355 - L.I.R – USA Mfg.**	9/12/00	Injection Molding Article 12 drum storage problem Oil/Water separator discharges via bare ground to storm drain (kerosene, paint, thinners, acetone, inks.

* Possible industrial discharges to be evaluated
** Sample results pending

As of 1/31/01

FACILITY INSPECTION LOCATIONS

APPENDIX C

COUNTY OF SUFFOLK

Robert J. Gaffney
Suffolk County Executive

DEPARTMENT OF HEALTH SERVICES

Clare B. Bradley, M.D., M.P.H.
Commissioner

August 7, 2000

Phil Grucci,
Vice President of Operations
Fireworks by Grucci
1 Grucci Lane
Brookhaven, NY 11719

RE: SCDHS Facility Inspection of August 2, 2000, Facility Reference # 9739

Dear Mr. Grucci;

On the above referenced date, this department conducted an inspection and some field sampling at the premises located at 1 Grucci Lane in Brookhaven. This inspection was conducted primarily for the purpose of determining compliance with Article 12 of the Suffolk County Sanitary Code. A copy of the inspection report is included with this correspondence, as well as supporting documents and tank registration materials. I will be contacting you within 45 days regarding the results of the field samples.

Please review the enclosed report carefully and acknowledge the non-compliance issues and recommendations noted. For your information, deficiencies are allowed 60 days for correction. Items that remain out of compliance upon re-inspection may subject your firm to a legal action and penalty.

This office appreciates your cooperation with respect to our investigation into the off-site perchlorite groundwater contamination. Someone from our water quality bureau will be contacting you in the near future to arrange the discussed geo-probe sampling. In the interim, if you have any questions or problems, please feel free to contact me at 631-344-4157.

Very Truly Yours,

Eileen Governale
Public Health Sanitarian

cc: Alex Santino, PE, Bureau of Pollution Control
John Gladysz, Bureau of Pollution Control

Suffolk County Department of Health Services
Department of Pollution Control
15 Horseblock Place
Farmingville, New York 11738

File Ref # 9739
Art 12 # 2-1311
SPDES # (none)

Facility Inspection Report

Date: **8/2/00**	Time: 9:00 AM	Type: *routine /GW investigation*	Eng. Review Requested: ***yes-Art 12, well placements***

Name/Address/Phone:	Contacts:
Fireworks by Grucci	**Christopher Carlino**, Dir.: of Operations
1 Grucci Lane, Brookhaven, NY 11719	**Phil Grucci**, VP of Operations
Phone: 631-286-0088, Fax: 631-286-9036	

General Description: Attachment of black powder fuses to imported, pre-assembled firework shells. Storage of assembled shells is in a series of isolated 'batteries'. Military contract that ended in 1998 involved the mfr. of bomb simulators using perchlorate, aluminum flash powder. Fireworks display shows are designed and assembled at this location. Some field testing and on-site incineration.

I. *Discharge Summary: (see also attached field notes)

Cesspools	1. Septic tank, sanitary pools for office, lunchroom 2. Septic tank, sanitary pool for employee bathroom and utility sink in production building #3.
Drywells	1. Production building #1, utility sink drywell on south side. 2. Production building #2, utility sink drywell on south side.
Surficial	1. Precipitation runoff from waste shell soak pad. (sampled on 8/2/00 for metals only) 2. Show warehouse: utility sink drains to the ground surface on the west side of the building (sampled on 8/2/00 for metals only).

***Note: Located within hydrogeological Zone VI.**

II. *Article 12 Summary: (see also attached field notes)

(Active) Tanks:	1. 275 gal outdoor AST at utility shed near production building #1. 2. 550 gal UST at utility shed on the west side of production building #2. 3. 275 gal AST for the office building and lunch room.
Drum Storage	1. Soaking pad. Waste shells soak in 6- 30 or 55-gallon drums prior to incineration. Drums are open and allowed to accumulate precipitation. 2. Empty Drum storage. Adjacent to soak pad. Drums are covered.
Sumps/pits	Concrete pit for the collection of rainwater seepage off the EOD chamber. Seepage was hardpiped into a 55-gallon drum stored in the pit. Phil Grucci stated that since this collection system was not utilized, the outlet pipe had been sealed years ago. The EOD chamber was demolished on 8/1/00. The pit structure is exposed, but filled with dirt and debris from the demolition.
Other	1. 47 trailers and 2 concrete bunkers for the storage of boxed, pre-assembled firework 'shells', 'salutes', and black powder for fuses. Each trailer is isolated with a 6 to 8 ft. earthen berm. Not considered 'bulk' storage and therefore exempt from SC Article 12 registration and 'bulk storage' building construction standards. 2. Minor volumes of paint, alcohol, Elmer's wood glue, acetone, and nitro cellulose (less than 50 gallons) noted in production buildings and warehouse.

** there are no SC Article 12 registered storage facilities currently*

Suffolk County Department of Health Services
Department of Pollution Control
15 Horseblock Place
Farmingville, New York 11738

File Ref # 9739
Art 12 # 2-1311
SPDES # (none)

Facility Inspection Report

III. Outdoor Uses: (Descriptions)

1. **Fireworks testing and employee training field:** It is expected that contaminants and propellants would be consumed during firing. Field area vegetation is sparse. Surface samples would determine if there area any accumulation of metals in the soil.
2. **EOD Chamber:** a concrete structure used for the incineration of waste fireworks material. Chamber had deteriorated and was demolished on 8/1/00. Phil Grucci intends to use the demo pile as berm material. A new EOD chamber is being planned.
3. **Fireworks waste soaking pad:** 6 to 8 drums on a flat concrete pad filled with water in which waste fireworks are soaked for several weeks prior to incineration.
4. **Cassone storage trailers:** Friend of Grucci is allowed to use site for empty container storage. Empty units are located in the testing /training field.
5. **Massive open excavation:** Sand is no longer being removed from this area and there is no activity or storage occurring within the excavated area. This pit comprises the largest single portion of the Grucci site.

IV. Recordkeeping

1. Waste streams/Disposal or Scavenger:	a) Incinerator ash: Recently stockpiled due to the demolition of EOD chamber. Should be characterized to determine proper disposal. b) Liquid in soaking drums: May require disposal periodically--should be characterized. To determine proper disposal. *c)* Empty drums: If accumulated for scrap or recycling, drums must be rendered acceptable to the hauler; often, triple rinsing required. This aqueous material may be considered a hazardous waste.
2. Monitoring Logs	None required at this time.

V. Violations/ Findings/ Recommendations

Violations:

1. Total on-site storage of fuel oil is 1100 g. (2-275 g. AST's, and 1- 550 g. UST). These tanks must be registered as per SC Article 12. (registration materials have been forwarded to firm with this report)

2. A composite sample was obtained from the soaking drums on 8/2/00 for heavy metals and perchlorate. If the sample results indicate that this material is toxic or hazardous under the Article 12 definition, then this open, outside, storage is in violation. This company will be advised accordingly to either eliminate outside drum storage, or to construct a safe and approvable storage facility. A composite soil sample from the edge of the soaking pad was also obtained to determine if pad run-off has impacted the area.

3. Incinerator ash may be toxic and hazardous. Currently this ash is being stored in an open roll-off. Grucci Fireworks must ensure that the roll-off container does not continue to accumulate water or leak until this material is properly disposed of. A sample of the ash was obtained on 8/2/00 and will be analyzed for heavy metals.

4. Field warehouse utility/hand wash sink currently drains to the ground surface. The Suffolk County Sanitary code requires that this drainage not be exposed to the atmosphere. The soil beneath this discharge was sampled for heavy metals on 8/2/00.

Suffolk County Department of Health Services
Department of Pollution Control
15 Horseblock Place
Farmingville, New York 11738

File Ref # 9739
Art 12 # 2-1311
SPDES # (none)

Facility Inspection Report

Findings and Recommendations:

1. Recently, samples from residential drinking water wells near this firm have shown elevated levels of perchlorates. There are several potential sources of this contaminant, including the municipal landfill. Regarding this firm, we note that perchlorates are present only in very small quantities in fireworks shells, but an earlier, temporary process had required the mixing and repackaging of perchlorate compounds. Grucci Fireworks has given the Suffolk County Department of Health Services permission to install temporary monitoring wells on this property for the investigation of the perchlorate contamination. Such groundwater monitoring may include upgradient locations at the Northern boundary, as well as locations downgradient in and near the test field and on Horseblock Road (see attached sketch).

2. In 1998, two on-site potable supply wells were sampled and found to be free of this compound. These wells should be re-sampled. These wells do not appear to be directly downgradient of a potential point source, however.

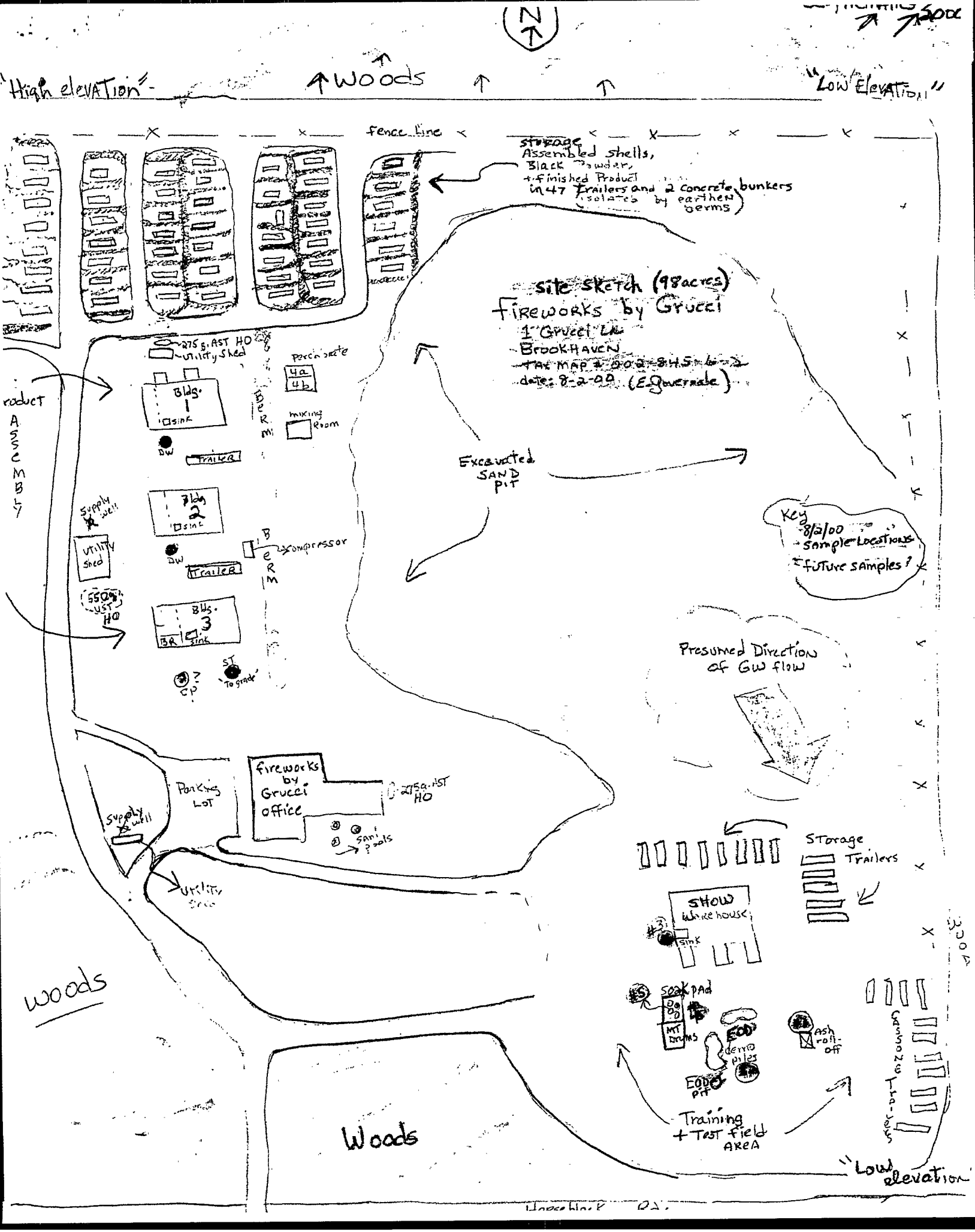
3. Three small prep and assembly buildings have utility sinks that discharge to adjacent drywells. These sinks present a past and future environmental vulnerability for the discharge of waste chemicals or solvents. Therefore, SCDHS requests that the covers of these leaching structures be made accessible for sampling within 30 days.

4. The EOD incineration chamber has recently been demolished due to structural failure. Fireworks by Grucci intends to rebuild this structure. This Firm is advised that most incineration units are subject to air pollution regulations and restrictions. Therefore, before the initiation of construction, this company should contact the NYSDEC regarding the applicable codes and requirements at 631-444- 0205.

5. A composite sample of the soil mixed with the EOD demolition debris was obtained on 8/2/00. This sample will be analyzed for heavy metal contamination.

6. Results of all SCDHS sampling on 8/2/00 will be known within 40 days.

Facility Representative:	Report Date	Inspector
Chris Carlino, Dir. Of Operations **Phil Grucci**, VP Operations	8/4/00	Eileen Governale Eileen Governale, Public Health Sanitarian, Telephone-631-344-4157


"High elevation"
Woods
"Low Elevation"
fence line
storage
Assembled shells,
Black Powder,
+ finished Product
in 47 trailers and 2 concrete bunkers
(isolated by earthen berms)
site sketch (98 acres)
Fireworks by Grucci
1 Grucci Ln
Brookhaven
tax map # 200-8-45.6
date: 8-2-00 (E Gruenade)
Excavated SAND PIT
Key
8/2/00
sample Locations
future samples?
Presumed Direction of GW flow
product ASSEMBLY
275 g. AST HO
Utility Shed
Bldg. 1
sink
DW
trailer
Porta-pots
4a
4b
mixing Room
BERM
Bldg 2
sink
DW
trailer
compressor
Supply well
Utility Shed
550 g. UST HO
Bldg. 3
BR
sink
CP ?
ST
To grade
Parking LOT
fireworks by Grucci office
275 g. AST HO
sani pools
Supply well
Utility Area
Storage Trailers
SHOW
shake house
#3
sink
soak pad
MT drums
EOD
debris piles
EOD pit
Ash roll-off
Training + Test field AREA
Woods
Woods
"Low elevation"

COUNTY OF SUFFOLK

ROBERT J. GAFFNEY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

CLARE B. BRADLEY, M.D., M.P.H.
ACTING COMMISSIONER

August 31, 2000

Mr. Phillip Grucci
Vice President of Operations
Fireworks by Grucci
1 Grucci Lane
Brookhaven, N.Y. 11719

Subject: Storage of Toxic and Hazardous Materials

Dear Mr. Grucci,

A representative of the Department of Health Services conducted an inspection of your site on August 2, 2000.

Based on the inspection report, this office initially requires that you complete the following items:

1) Upgrade your soaking pad area to Article 12 standards thereby eliminating the potential for any perchlorate-contaminated water to be released to the ground.

2) Eliminate the rainwater collection pit when you reconstruct your Explosive Ordinance Disposal (EOD) incinerator. The concrete pit holding a 55 gallon drum which collected rainwater runoff from your old EOD incinerator did not meet Article 12 standards.

3) Register your fuel oil tanks since the total aggregate storage of petroleum product on site is equal to 1,100 gallons.

4) Connect the sink drain from your field warehouse hand wash sink to an appropriately designed sanitary disposal structure and eliminate the surface discharge from this building.

Your environmental consultant, Fanning, Phillips and Molnar, has contacted us and a meeting is scheduled for September 15, 2000 at 9:00 AM, in the office of the Director of the Division of Environmental Quality at 220 Rabro Drive, Hauppauge. The purpose of the meeting is to address the issues discussed above and other issues concerning your facility.

If you have any questions regarding this matter, please contact this office at 854-2529.

Very truly yours,

Alexander M. Santino, P.E.
Acting Chief, Office of Pollution Control

AS/lr

cc: Clare B. Bradley, M.D., M.P.H., Commissioner
Vito Minei, P.E.
Robert Seyfarth
Dennis Gobbi

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF MEDICAL-LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC & ENVIRONMENTAL HEALTH LABORATORY
NYSDOH LAB ID. NUMBER 10528

SAMPLING ANALYSIS REQUEST/CHAIN OF CUSTODY

Field Number: 00134800080 2 Laboratory Number I W 08 00 001

Collected By: Eileen Governale Assisted By: -

Affiliation: SCDHS Date: 8/2/00 Time: 12 50 AM

Facility/Name Gucci Tires Corp

Location: 1 Gucci Ln Brookhaven

Point of Collection: ash dumpster - composite

Remarks: -

Volatile Organic Bottle Control Number: _____ Sample Matrix _____

Analysis Requested (By Section)

Air Pollution

[ ] Volatile Organic Hydrocarbons
[ ] Asbestos (Bulk)

Hazardous Materials (Organics)

[ ] Volatile Organics (EPA 8260B)
Preservation: [ ] HCL [ ] Cooled to 4°C
Level of Detection: [ ] 4ppb [ ] 40 ppb [ ] 100 ppb
[ ] Semivolatile Organics (EPA 8270C)
Type _____
[ ] Flash Point (EPA 1010)
[ ] TCLP
[ ] Other _____

Industrial Waste (Inorganics)

[X] Metals [ ] Preserved Barium, Strontiu Aluminu Coppe Titaniu
[ ] Radiological
[ ] Mercury
[ ] Phenols
[ ] Cyanide [ ] Preserved
[ ] Chloride, Sulfate
[ ] Fluoride
[ ] Ammonia, Nitrate, Nitrite
[ ] T K N
[ ] Solids (SS, DS, TS)
[ ] MBAS, COD
[ ] Oil & Grease
[ ] TPH
[ ] pH Indicate Field pH: _____

Total Number of Sample Containers Submitted 1

Custody Section

Relinquished By:

Name Eileen Governale Date 8/3/00
Signature Eileen Governale Time 9AM

Received By:

Name Scott Mackin Date 8/3/00
Signature _____ Time 945

Name _____ Date _____ Name _____ Date _____
Signature _____ Time _____ Signature _____ Time _____

Name _____ Date _____ Name _____ Date _____
Signature _____ Time _____ Signature _____ Time _____

1099Chncust/A

Suffolk County Department of Health Services
Division of Medical-Legal Investigations & Forensic Sciences
Public & Environmental Health Laboratory
(Industrial Waste Solid Samples)

FIELD
Field No. 001 3480000 802

Laboratory
Lab No. IW 0800 001

Date Completed 8/16/00 8/15 SM

Name of Firm Grucci

Address or Location

Remarks/ Instructions

	TEST	RESULT		TEST	RESULT ug/g (PPM)		TEST	RESULT ug/g (PPM)
	pH (Field)			COD			Potassium	15000
	pH (Lab)			Cyanide			➢Selenium	<10.
	TEST	RESULT ug/g (PPM)		Phenols			➢Silver	4.
				METALS			Sodium	1800.
	Chloride			Aluminum	22000.		Thallium	<25
	Fluoride			Antimony	<10.		Vanadium	20.
	Sulfate			➢Arsenic	<10.		Zinc	430.
	Sulfite			➢Barium	3500.		STRONTIUM	1600.
	Sulfide			Beryllium	<1.		EP Toxicity	
	MBAS			➢Cadmium	<2.		TCLP	
	TOC			Calcium	47000.			
	Nitrate - N			➢Chromium	35.		Perchlorate	24.6
	Nitrite - N			Cobalt	<10.			
	Ammonia - N			Copper	5500.			
	TKN			Iron	7700.			
	Total Solids			➢Lead	290.			
	Susp. Solids			Magnesium	6900.			
	Diss. Solids			Manganese	190.			
	TPH			Molybdenum	<10			
	Oil & Grease			Nickel	20.			

EP Toxicity and TCLP includes all metals marked with ➢

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF MEDICAL-LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC & ENVIRONMENTAL HEALTH LABORATORY
NYSDOH LAB ID. NUMBER 10528

SAMPLING ANALYSIS REQUEST/CHAIN OF CUSTODY

Field Number: 002348 000802 Laboratory Number I W 08 00 002
Collected By: Eileen Governale Assisted By:
Affiliation: SCDHS Date: 8/2/00 Time: 1:05 pm
Facility/Name Grucci Fireworks
Location: 1 Grucci La, Brookhaven
Point of Collection: EOD chamber demo pile - composite
Remarks:

Volatile Organic Bottle Control Number: - Sample Matrix Soil

Analysis Requested (By Section)

Air Pollution

[ ] Volatile Organic Hydrocarbons
[ ] Asbestos (Bulk)

Hazardous Materials (Organics)

[ ] Volatile Organics (EPA 8260B)
Preservation: [ ] HCL [ ] Cooled to 4°C
Level of Detection: [ ] 4ppb [ ] 40 ppb [ ] 100 ppb
[ ] Semivolatile Organics (EPA 8270C)
Type
[ ] Flash Point (EPA 1010)
[ ] TCLP
[ ] Other

Industrial Waste (Inorganics)

Barium. Strontium Aluminum Cu, Ti

[X] Metals [ ] Preserved
[ ] Radiological
[ ] Mercury
[ ] Phenols
[ ] Cyanide [ ] Preserved
[ ] Chloride, Sulfate
[ ] Fluoride
[ ] Ammonia, Nitrate, Nitrite
[ ] TKN
[ ] Solids (SS, DS, TS)
[ ] MBAS, COD
[ ] Oil & Grease
[ ] TPH
[ ] pH Indicate Field pH:

Total Number of Sample Containers Submitted 1

Custody Section

Relinquished By:		Received By:	
Name Eileen Governale	Date 8/3/00	Name Scott Mrakell	Date 8/3/00
Signature Eileen Governale	Time 9 45 A	Signature	Time 945
Name	Date	Name	Date
Signature	Time	Signature	Time
Name	Date	Name	Date
Signature	Time	Signature	Time

1099Chncust/A

Suffolk County Department of Health Services
Division of Medical-Legal Investigations & Forensic Sciences
Public & Environmental Health Laboratory
(Industrial Waste Soil Sample)

FIELD
Field No. 002345000 802

Laboratory
Lab No. EAV 0800 002

Date Completed 8/10/00 8/10/00 SP

Name of Firm Cucci

Address or Location

Remarks/ Instructions

	TEST	RESULT		TEST	RESULT ug/g (PPM)		TEST	RESULT ug/g (PPM)
	pH (Field)			COD			Potassium	500.
	pH (Lab)			Cyanide			>Selenium	<10.
	TEST	RESULT ug/g (PPM)		Phenols			>Silver	<2.
				METALS			Sodium	<100
	Chloride			Aluminum	3800.		Thallium	<25.
	Fluoride			Antimony	<10.		Vanadium	10.
	Sulfate			>Arsenic	<10.		Zinc	80.
	Sulfite			>Barium	110.		STRONTIUM	53.
	Sulfide			Beryllium	<1.		EP Toxicity	
	MBAS			>Cadmium	<2.		TCLP	
	TOC			Calcium	5800.			
	Nitrate - N			>Chromium	15.			
	Nitrite - N			Cobalt	<10.		Perchlorate	0.138
	Ammonia - N			Copper	1500.			
	TKN			Iron	5200.			
	Total Solids			>Lead	35.			
	Susp. Solids			Magnesium	600.			
	Diss. Solids			Manganese	50.			
	TPH			Molybdenum	<10.			
	Oil & Grease			Nickel	15.			

EP Toxicity and TCLP includes all metals marked with >

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF MEDICAL-LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC & ENVIRONMENTAL HEALTH LABORATORY
NYSDOH LAB ID. NUMBER 10528

SAMPLING ANALYSIS REQUEST/CHAIN OF CUSTODY

Field Number: 003 348 000802 Laboratory Number I W 08 00 003
Collected By: Eileen Governale Assisted By:
Affiliation: SCDHS Date: 8/2/00 Time: 120 pm
Facility/Name Gucci Fireworks
Location: 1 Gucci Pa, BKHN
Point of Collection: Soil beneath slop sink drain - @ west side of field Wa
Remarks: n

Volatile Organic Bottle Control Number: ___ - ___ - ___ Sample Matrix Soil

Analysis Requested (By Section)

Air Pollution

[ ] Volatile Organic Hydrocarbons
[ ] Asbestos (Bulk)

Hazardous Materials (Organics)

[ ] Volatile Organics (EPA 8260B)
Preservation: [ ] HCL [ ] Cooled to 4°C
Level of Detection: [ ] 4ppb [ ] 40 ppb [ ] 100 ppb
[ ] Semivolatile Organics (EPA 8270C)
Type ___
[ ] Flash Point (EPA 1010)
[ ] TCLP
[ ] Other ___

Industrial Waste (Inorganics)

[X] Metals [ ] Preserved
[ ] Radiological
[ ] Mercury
[ ] Phenols
[ ] Cyanide [ ] Preserved
[ ] Indicate analysis to be performed
___Ammonia, Nitrate, Nitrite
___Chloride ___ Sulfate ___pH
[ ] TKN
[ ] Solids (SS, DS, TS)
[ ] ___MBAS ___ COD
[ ] Oil & Grease
[ ] TPH
Indicate Field pH: ___

Total Number of Sample Containers Submitted 1

Custody Section

Relinquished By:		Received By:	
Name Eileen Governale	Date 8/3/00	Name Scott Micallef	Date 8/3/00
Signature Eileen Governale	Time 945 AM	Signature	Time 94[illegible]
Name	Date	Name	Date
Signature	Time	Signature	Time
Name	Date	Name	Date
Signature	Time	Signature	Time

1099ChncustA

Suffolk County Department of Health Services
Division of Medical-Legal Investigations & Forensic Sciences
Public & Environmental Health Laboratory
(Industrial Waste Solid Samples)

FIELD
Field No. 003 3845 00802

Laboratory
Lab No. IW 08 00 003

Name of Firm Gruce.

Date Completed 8/10/00 LK

Address or Location

Remarks/ Instructions

	TEST	RESULT		TEST	RESULT ug/g (PPM)		TEST	RESULT ug/g (PPM)
	pH (Field)			COD			Potassium	280.
	pH (Lab)			Cyanide			➢Selenium	<10.
	TEST	RESULT ug/g (PPM)		Phenols			➢Silver	<2.
				METALS			Sodium	<100
	Chloride			Aluminum	3700.		Thallium	<25
	Fluoride			Antimony	<10.		Vanadium	<10.
	Sulfate			➢Arsenic	<10.		Zinc	100.
	Sulfite			➢Barium	25.		STRONTIUM	<10.
	Sulfide			Beryllium	<1.		EP Toxicity	
	MBAS			➢Cadmium	<2.		TCLP	
	TOC			Calcium	1200.			
	Nitrate - N			➢Chromium	<10.			
	Nitrite - N			Cobalt	<10.		Perchlorate	<0.1
	Ammonia - N			Copper	75.			
	TKN			Iron	7600.			
	Total Solids			➢Lead	<20.			
	Susp. Solids			Magnesium	1100.			
	Diss. Solids			Manganese	55.			
	TPH			Molybdenum	<10.			
	Oil & Grease			Nickel	<10.			

EP Toxicity and TCLP includes all metals marked with ➢

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF MEDICAL-LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC & ENVIRONMENTAL HEALTH LABORATORY
NYSDOH LAB ID. NUMBER 10528

SAMPLING ANALYSIS REQUEST/CHAIN OF CUSTODY

Field Number: 004348000802 Laboratory Number I W 08 co 004
Collected By: Eileen G Assisted By:
Affiliation: SCDHS Date: 8/2/00 Time: 1 40 pm
Facility/Name Gucci Fireworks
Location: 1 Gucci La, BKHN
Point of Collection: Soil at end of shell soab pad - composite
Remarks: metals - aluminum, barium, titanium, strontium, copper

Volatile Organic Bottle Control Number: Sample Matrix soil

Analysis Requested (By Section)

Air Pollution

[ ] Volatile Organic Hydrocarbons
[ ] Asbestos (Bulk)

Hazardous Materials (Organics)

[ ] Volatile Organics (EPA 8260B)
Preservation: [ ] HCL [ ] Cooled to 4°C
Level of Detection: [ ] 4ppb [ ] 40 ppb [ ] 100 ppb
[ ] Semivolatile Organics (EPA 8270C)
Type
[ ] Flash Point (EPA 1010)
[ ] TCLP
[ ] Other

Industrial Waste (Inorganics)

[X] Metals [ ] Preserved
[ ] Radiological
[ ] Mercury
[ ] Phenols
[ ] Cyanide [ ] Preserved
[ ] Chloride, Sulfate
[ ] Fluoride
[ ] Ammonia, Nitrate, Nitrite
[ ] T K N
[ ] Solids (SS, DS, TS)
[ ] MBAS, COD
[ ] Oil & Grease
[ ] TPH
[ ] pH Indicate Field pH:

Total Number of Sample Containers Submitted 1

Custody Section

Relinquished By:			Received By:		
Name Eileen Governale	Date 8/3/00		Name Scott Mirelli	Date 8/3/00	
Signature Eileen Governale	Time 9:45 p		Signature	Time 945	
Name	Date		Name	Date	
Signature	Time		Signature	Time	
Name	Date		Name	Date	
Signature	Time		Signature	Time	

1099Chncust/A

Suffolk County Department of Health Services
Division of Medical-Legal Investigations & Forensic Sciences
Public & Environmental Health Laboratory
(Industrial Waste Solid Samples)

FIELD
Field No. 004348 000 502

Laboratory
Lab No. IC 08 00 00

Name of Firm Gucci
Date Completed 8/10/00 Arsenic

Address or Location

Remarks/ Instructions

	TEST	RESULT		TEST	RESULT ug/g (PPM)		TEST	RESULT ug/g (PPM)
	pH (Field)			COD			Potassium	600.
	pH (Lab)			Cyanide			≥Selenium	<10.
	TEST	RESULT ug/g (PPM)		Phenols			≥Silver	<2.
				METALS			Sodium	<100.
	Chloride			Aluminum	3500.		Thallium	<25.
	Fluoride			Antimony	35.		Vanadium	<10.
	Sulfate			≥Arsenic	<10.		Zinc	160.
	Sulfite			≥Barium	700.		Strontium	140.
	Sulfide			Beryllium	<1.		EP Toxicity	
	MBAS			≥Cadmium	<2.		TCLP	
	TOC			Calcium	280.			
	Nitrate - N			≥Chromium	30.			
	Nitrite - N			Cobalt	<10.		Perchlorate	22.3
	Ammonia - N			Copper	460.			
	TKN			Iron	8400.			
	Total Solids			≥Lead	<20.			
	Susp. Solids			Magnesium	660.			
	Diss. Solids			Manganese	45.			
	TPH			Molybdenum	<10.			
	Oil & Grease			Nickel	<10.			

EP Toxicity and TCLP includes all metals marked with ≥

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF MEDICAL-LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC & ENVIRONMENTAL HEALTH LABORATORY
NYSDOH LAB ID. NUMBER 10528

SAMPLING ANALYSIS REQUEST/CHAIN OF CUSTODY

Field Number: 005 348 00 080 2 Laboratory Number I W 08 00 005

Collected By: Eileen G. Assisted By: —

Affiliation: SCDHS Date: 8-2-00 Time: 1 45 pm

Facility/Name Gucci Fireworks

Location: 1 Gucci Ja, BKHN

Point of Collection: - Open drums of water (with shells) on soak pad.

Remarks: - Sample for perchlorates & metals

Volatile Organic Bottle Control Number: _____ Sample Matrix liquid

Analysis Requested (By Section)

Air Pollution

[ ] Volatile Organic Hydrocarbons
[ ] Asbestos (Bulk)

Hazardous Materials (Organics)

[ ] Volatile Organics (EPA 8260B)
Preservation: [ ] HCL [ ] Cooled to 4°C
Level of Detection: [ ] 4ppb [ ] 40 ppb [ ] 100 ppb
[ ] Semivolatile Organics (EPA 8270C)
Type _____
[ ] Flash Point (FPA 1010)
[ ] TCLP
[ ] Other _____

Industrial Waste (Inorganics)

[X] Metals [ ] Preserved
[ ] Radiological
[ ] Mercury
[ ] Phenols
[ ] Cyanide [ ] Preserved
[ ] Chloride, Sulfate
[ ] Fluoride
[ ] Ammonia, Nitrate, Nitrite
[ ] TKN
[ ] Solids (SS, DS, TS)
[ ] MBAS, COD
[ ] Oil & Grease
[ ] TPH
[ ] pH Indicate Field pH: _____

Total Number of Sample Containers Submitted 1

Custody Section

Relinquished By:			Received By:		
Name	Eileen Gouvernale	Date 8/3/00	Name	Scott Mirabella	Date 8/3/00
Signature	Eileen Gouvernale	Time 9 45 AM	Signature		Time 945
Name		Date	Name		Date
Signature		Time	Signature		Time
Name		Date	Name		Date
Signature		Time	Signature		Time

1099Chncust/A

Suffolk County Department of Health Services
Division of Medical-Legal Investigations & Forensic Sciences
Public & Environmental Health Laboratory
(Industrial Waste Liquid Samples)

FIELD
Field No. 005 346 000 802

Laboratory
Lab No. I W 0 8 0 0 0 0 5

Date Completed 8/10/00 8/10 PSM

Name of Firm Gucci

Address or Location

Remarks/ Instructions

	TEST	RESULT		TEST	RESULT Mg/L (PPM)		TEST	RESULT Mg/L (PPM)
	pH (Field)			COD			Nickel	<.1
	pH (Lab)			Cyanide			Potassium	4400.
	TEST	RESULT		Phenols			➢Selenium	<.1
		Mg/L (PPM)		METALS			Silicon	31.
	Chloride			Aluminum	17		➢Silver	<.02
	Fluoride			Antimony	4.6		Sodium	110.
	Sulfate			➢Arsenic	<.1		Thallium	<.25
	Sulfite			➢Barium	7.		Titanium	.10.
	Sulfide			Beryllium	<.01		Vanadium	<.1
	MBAS			Boron	.45		Zinc	1.6
	TOC			➢Cadmium	<.02		STRONTIUM	15.
	Nitrate - N			Calcium	65.		Cr^{+6}	
	Nitrite - N			➢Chromium	1.9			
	Ammonia - N			Cobalt	<.1		EP Toxicity	
	TKN			Copper	3.4		TCLP	
	Total Solids			Iron	29.			
	Susp. Solids			➢Lead	.2		Perchlorate	1600
	Diss. Solids			Magnesium	70.			
	TPH			Manganese	.5			
	Oil & Grease			Molybdenum	<.1			

EP Toxicity and TCLP includes all metals marked with ➢

APPENDIX D

YAPHANK PERCHLORATE DATA SUMMARY

Well #	PP-1					PP-2				PP-3			
Sample Date	080900					081000				081100			
Depth Below Land Surface	15-20	25-30	35-40	45-50	55-60	15-20	25-30	35-40	45-50	15-20	25-30	35-40	45-50
INORGANICS													
perchlorate	21	34	10	<4	<4	7	12	21	<4	10	20	22	<4
nitrate	0.4	0.7	1.6	<0.2	<0.2	<0.2	<0.2	1.1	<0.2	<0.2	<0.2	1.4	<0.2
VOLATILE ORGANICS													
1,1 dichloroethane	nd	1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
chloroform	1	nd	nd	2	1	1	nd	nd	2	2	nd	nd	2
1,1,1 trichloroethane	0.5	3	1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
trichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
tetrachloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
cis 1,2 dichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
carbon disulfide	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MTBE	nd	1	nd	nd	nd	nd	nd	nd	nd	nd	nd	1	nd
PESTICIDES													
chlorinated pesticides	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
EDB/DBCP	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

YAPHANK PERCHLORATE DATA SUMMARY

Well #	PP-4					PP-5					PP-6					
Sample Date	081500					081600					082200					
Depth Below Land Surface	15-20	25-30	35-40	45-50	55-60	15-20	25-30	35-40	45-50	55-60	65-70	75-80	85-90	95-100	105-110	115-120
INORGANICS																
perchlorate	27.	9.	10.	2.	<2	5.	12.	99.	3.	<2	<2	<2	<2	<2	<2	<2
nitrate	0.3	0.3	2.5	0.6	1.1	<0.2	<0.2	0.3	0.2	<0.2	0.3	1.3	1.5	1.5	1.3	0.3
VOLATILE ORGANICS																
1,1 dichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
chloroform	3	nd	nd	2	1	2	3	nd	2	2	2	nd	nd	nd	nd	2
1,1,1 trichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
trichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
tetrachloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
cis 1,2 dichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
carbon disulfide	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MTBE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PESTICIDES																
chlorinated pesticides	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
EDB/DBCP	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

YAPHANK PERCHLORATE DATA SUMMARY

Well #	PP-7					PP-8					PP-9				
Sample Date	082300					091200					082900				
Depth Below Land Surface	65-70	75-80	85-90	95-100	105-110	65-70	75-80	85-90	95-100	105-110	65-70	75-80	85-90	95-100	105-110
INORGANICS															
perchlorate	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
nitrate	1.8	7.3	4.4	2.2	6.9	<0.2	1.8	2.9	0.8	0.5	6.8	6.4	0.5	2.4	6.4
VOLATILE ORGANICS															
1,1 dichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
chloroform	nd	nd	nd	nd	nd	1	nd	nd	nd	1	nd	1	2	nd	nd
1,1,1 trichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
trichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.7	nd	nd
tetrachloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
cis 1,2 dichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.8	5	nd	0.6
carbon disulfide	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MTBE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PESTICIDES															
chlorinated pesticides	nd	nd	nd	nd	nd		nd	nd	nd	nd	nd	nd	nd	nd	nd
EDB/DBCP	nd	nd	nd	nd	nd		nd	nd	nd	nd	nd	nd	nd	nd	nd
Imidacloprid	0.48	5.98	0.96	<0.2	<0.2						nd	nd	nd	nd	nd
bis 2-ethylhexyl adipate	0.6	0.51	-	<0.5	<0.5						nd	nd	nd	nd	nd
bis 2-ethylhexyl phthalate	2.6	3.7	-	<2	<2						nd	nd	nd	nd	nd
iprodione	<0.5	2.2	-	<0.5	<0.5	semi-volatile organics					nd	nd	nd	nd	nd
carbaryl*	nd	0.34	nd	nd	nd	carbamate pesticides					nd	nd	nd	nd	nd
TCPA	nd	nd	nd	nd	nd						nd	nd	nd	nd	nd

* reportable minimum detection limit 0.5 ug/L

YAPHANK PERCHLORATE DATA SUMMARY

Well #	PP-10					PP-11						PP-12	PP-13	PP-14	PP-15
Sample Date	090600					083100						090500	090500	090500	090500
Depth Below Land Surface	70-75	80-85	90-95	100-105	110-115	55-60	65-70	75-80	85-90	95-100	105-110	35-40	35-40	35-40	35-40
INORGANICS															
perchlorate	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	71	98	77	122
nitrate	0.5	1.7	2.0	10.7	13.7	1.1	2.3	1.3	1.8	2.3	2.9	0.4	0.2	0.3	0.5
VOLATILE ORGANICS															
1,1 dichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
chloroform	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	2
1,1,1 trichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
trichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
tetrachloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.5	nd	nd	nd	nd
cis 1,2 dichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
carbon disulfide	1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MTBE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PESTICIDES															
chlorinated pesticides	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
EDB/DBCP	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Imidacloprid*	nd	0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd				
atrazine	<0.2	<0.2	<0.2	0.23	<0.2	nd	nd	nd	nd	nd	nd				
iprodione**	<0.5	0.17	0.52	<0.5	<0.5	nd	nd	nd	nd	nd	nd				
bis 2-ethylhexyl phthalate	<2	2.38	-	<2	-	nd	nd	nd	nd	nd	nd				
metolachlor	nd	0.23	0.16	nd	nd	nd	nd	nd	nd	nd	nd				
TCPA	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd				
Carbamates	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd				

* reportable minimum detection limit 0.2 ug/L **reportable minimum detection limit 0.5 ug/L

YAPHANK PERCHLORATE DATA SUMMARY

Well #	PP-16						PP-17					PP-18				
Sample Date	092000						092200					092100				
Depth Below Land Surface	15-20	25-30	35-40	45-50	55-60	65-70	20-25	25-30	35-40	45-50	55-60	15-20	25-30	35-40	45-50	55-60
INORGANICS																
perchlorate	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	32	4	3	<2	<2
nitrate	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	0.4	0.9	<0.2	<0.2	<0.2	<0.2	0.5	1.7	<0.2
VOLATILE ORGANICS																
1,1 dichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
chloroform	2	3	4	1	2	3	2	1	nd	2	2	4	2	1	nd	2
1,1,1 trichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
trichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
tetrachloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
cis 1,2 dichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
carbon disulfide	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
toluene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MTBE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PESTICIDES																
chlorinated pesticides	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd			nd	nd
EDB/DBCP	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd			nd	nd

YAPHANK PERCHLORATE DATA SUMMARY

Well #	PP-19							PP-20						S-68042
Sample Date	092500							092800						071200
Depth Below Land Surface	15-20	25-30	35-40	45-50	55-60	75-80	95-100	25-30	35-40	45-50	55-60	65-70	85-90	15-20
INORGANICS														
perchlorate	<4	<4	<4	16	12	5	<4	43	<2	<2	<2	<2	<2	<20
nitrate	<0.2	<0.2	<0.2	0.2	0.4	0.8	<0.2	0.2	<0.2	<0.2	<0.2	0.5	0.4	0.3
VOLATILE ORGANICS														
1,1 dichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
chloroform	3	3	4	2	2	2	nd	2	3	3	2	nd	nd	2
1,1,1 trichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
trichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
tetrachloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
cis 1,2 dichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
carbon disulfide	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
toluene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.5
MTBE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PESTICIDES														
chlorinated pesticides	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
EDB/DBCP	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

YAPHANK PERCHLORATE DATA SUMMARY

Well #	PP-21						PP-22					PP-23					
Sample Date	092900						100300					100400					
Depth Below Land Surface	35-40	45-50	55-60	65-70	75-80	85-90	45-50	55-60	65-70	75-80	85-90	35-40	45-50	55-60	65-70	75-80	85-90
INORGANICS																	
perchlorate	9	<2	<2	<2	<2	<2	3	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
nitrate	na	na	na	na	na	na	<0.2	<0.2	<0.2	0.8	1.0	<0.2	<0.2	<0.2	0.4	1.7	1.6
VOLATILE ORGANICS																	
1,1 dichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
chloroform	2	3	2	2	nd	nd	3	3	3	2	1	2	2	3	1	nd	nd
1,1,1 trichloroethane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
trichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
tetrachloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
cis 1,2 dichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
carbon disulfide	nd	nd	nd	nd	nd	nd	nd	2	nd	nd	nd	0.5	nd	nd	nd	nd	nd
toluene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MTBE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PESTICIDES																	
chlorinated pesticides	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
EDB/DBCP	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

YAPHANK PERCHLORATE DATA SUMMARY

Well #	PP-24											Soil Sample #1	Soil Sample #2
Sample Date	100500											101600	101600
Depth Below Land Surface	35-40	45-50	55-60	65-70	75-80	85-90						surface at 21 & 22	surface at PP-20
INORGANICS													
perchlorate	<2	<2	<2	<2	<2	<2						<20	<20
nitrate	<0.2	<0.2	0.6	1.6	1.6	1.7							
VOLATILE ORGANICS													
1,1 dichloroethane	nd	nd	nd	nd	nd	nd							
chloroform	1	1	1	nd	nd	nd							
1,1,1 trichloroethane	nd	nd	nd	nd	nd	nd							
trichloroethene	nd	nd	nd	nd	nd	nd							
tetrachloroethene	nd	nd	nd	nd	nd	nd							
cis 1,2 dichloroethene	nd	nd	nd	nd	nd	nd							
carbon disulfide	nd	0.6	nd	nd	nd	nd							
toluene	nd	nd	nd	nd	nd	nd							
MTBE	nd	nd	nd	nd	nd	nd							
PESTICIDES													
chlorinated pesticides	nd	nd	nd	nd	nd	nd							
EDB/DBCP	nd	nd	nd	nd	nd	nd							

YAPHANKdata.wpd

APPENDIX E

Perchlorate Concentrations in Micrograms per Liter

Well #	Depth	Sample Date	SCWA	SCDHS
PP1	35-40	08/09/00	10.9	10.
PP1	25-30	08/09/00	39.6	34.
PP1	15-20	08/09/00	25.5	21.
PP3	35-40	08/10/00	27.9	22.
PP3	25-30	08/10/00	24.0	20.
PP3	15-20	08/10/00	9.3	10.
PP2	35-40	08/10/00	28.3	21.
PP2	25-30	08/10/00	14.8	12.
PP2	15-20	08/10/00	8.6	7.
PP12	35-40	09/05/00	89.6	71.
PP13	35-40	09/05/00	120.3	98.
PP14	35-40	09/05/00	93.7	77.
PP15	35-40	09/05/00	138.5	122.
PP18	35-40	09/21/00	<3.0	3.
PP18	25-30	09/21/00	4.2	4.
PP18	15-20	09/21/00	38.9	32.
PP19	75-80	09/25/00	7.4	5.
PP19	55-60	09/25/00	12.6	12.
PP19	45-50	09/25/00	19.4	16.
PP20	25-30	09/28/00	53.0	43.
PP21	35-40	09/29/00	8.0	9.
PP22	45-50	10/03/00	3.2	3.

Plate 1
Yaphank Perchlorate Investigation

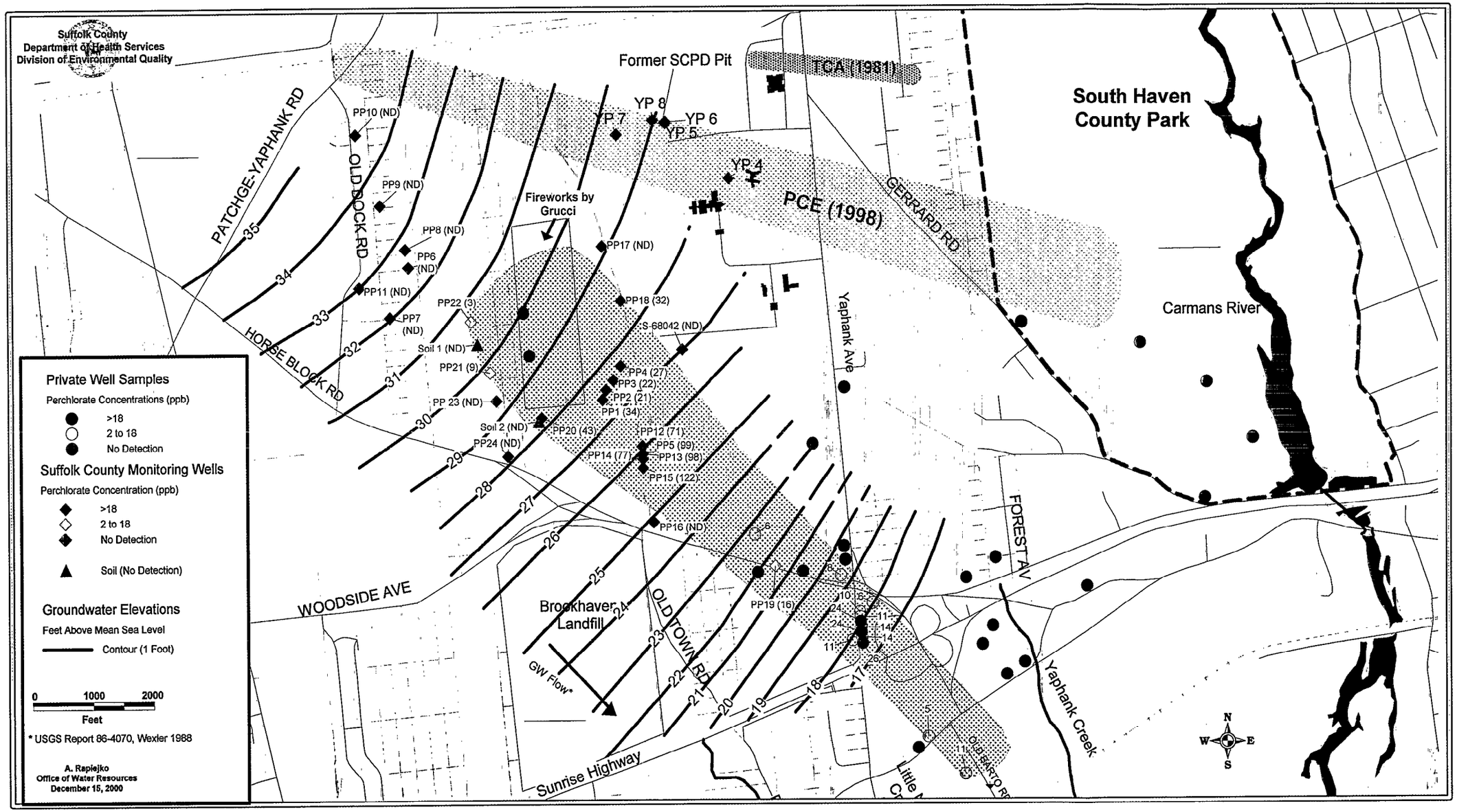


Plate 2
Water Table Contours